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BANGALORE WATER SUPPLY AND SEWERAGE BOARD

6th Floor, Cauvery Bhavan,
K.G. Road, Bangalore 560009

Work of Supply, Installation, Testing & Commissioning of Submersible ultra heavy duty, dredging vertical pumpset, Supply of Helicoidal Screw conveyor and Helicoidal Inbuilt washing compactor, Supply of Odour Control Units, Online monitor of total and specific bacteria activity (E.coli and coliform) in water, Ultra Violet Disinfection Reactor - 1 MLD Design Flow at Yelahanka 10MLD TTP coming under AEE(WWM-P-H&AV)-1 sub division.(2nd Call)

(Through Karnataka Procurement Portal only)

https://www.kppp.karnataka.gov.in

Office of the Chief Engineer (Waste Water Management-West)
BANGALORE WATER SUPPLY & SEWERAGE BOARD
6th Floor, Cauvery Bhavan,
K.G. Road, Bangalore 560009
Telephone – 080-22945350

TENDER REFERENCE :	:	No.: BWSSB/CE(WWM-W)/ACE(WWM-P-W)/DCE(WWM-E&W)/TA-2/ 641/2025-26 Dated: 02.07.2025
NAME OF THE WORK	:	**Work of Supply, Installation, Testing & Commissioning of Submersible ultra heavy duty, dredging vertical pumpset, Supply of Helicoidal Screw conveyor and Helicoidal Inbuilt washing compactor, Supply of Odour Control Units, Online monitor of total and specific bacteria activity (E.coli and coliform) in water, Ultra Violet Disinfection Reactor - 1 MLD Design Flow at Yelahanka 10MLD TTP coming under AEE(WWM-P-H&AV)-1 sub division.(2nd Call)**
LAST DATE AND TIME FOR RECEIPT OF TENDERS	:	17-07 -2025 16:00hrs
TIME AND DATE OF OPENING OF TECHNICAL TENDERS	:	18-07-2025 17:00hrs
PLACE OF OPENING OF TECHINCAL TENDERS	:	Office of The Chief Engineer (Waste Water Management-West) Bangalore Water Supply & Sewerage Board 6th Floor, Cauvery Bhavan, K.G. Road, Bangalore 560009
TIME AND DATE OF OPENING OF PRICE TENDERS	:	Will be intimated to the qualified tenderers
PLACE OF OPENING OF PRICE TENDER	:	Will be intimated to the qualified tenderers

ADDRESS FOR COMMUNICATION	:	Office of The Chief Engineer (Waste Water Management-West) Bangalore Water Supply & Sewerage Board 6th Floor, Cauvery Bhavan, K.G. Road, Bangalore 560 009

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BANGALORE WATER SUPPLY AND SEWERAGE BOARD
Office of The Chief Engineer (Waste Water Management-West)
5th Floor, Cauvery Bhavan, K.G. Road, Bangalore-560009

INVITATION FOR TENDER

(ONLY THROUGH KARNATAKA PROCUREMENT PORTAL)

IFT No.: BWSSB/CE (WWM-W)/ACE(WWM-P-W)/DCE(WWM-E&W)/TA-2/641 /2025-26 Dt: 02.07.2025

SECTION 1
INVITATION FOR TENDER

The Chief Engineer (Waste Water Management-West) invites tenders from eligible tenderers for **: Work of Supply, Installation, Testing & Commissioning of Submersible ultra heavy duty, dredging vertical pumpset, Supply of Helicoidal Screw conveyor and Helicoidal Inbuilt washing compactor, Supply of Odour Control Units, Online monitor of total and specific bacteria activity (E.coli and coliform) in water, Ultra Violet Disinfection Reactor - 1 MLD Design Flow at Yelahanka 10MLD TTP coming under AEE(WWM-P-H&AV)-1 sub division (2nd Call)** detailed in the table below. Tenderers are requested to submit their tender, EMD and details of their capability to undertake the tender (as detailed in ITT Clause-3 & 6) in the Karnataka Public Procurement Portal. Price tender will be opened only if the Tenderer is found to be qualified to execute the tendered works. Tenderers are advised to note the minimum qualification criteria specified in clause 3 of the Instructions to Tenderers to qualify for award of the contract.

1. Tender documents may be downloaded through Karnataka Procurement Portal www.kppp.karnataka.gov.in website only from 03**-07-2025 to 17-0-2025**. Interested Tenderers may obtain further information by accessing the same website.
2. Tenders must be accompanied by Earnest Money Deposit specified for the work in the Table below. EMD will have to be in any one of the forms as specified in the Tender document and shall have to be valid for **45** days beyond the validity of the tender.
3. The last date and time for receipt of tenders in the Electronic Tender Box in website (www.kppp.karnataka.gov.in) is 17.07-2025 up to 16.00 hrs. The technical bids will be opened on 18.07-2025 at 17:00hrs. If the bid-opening day remains as public holiday, bids will be opened on the next working day at the original stipulated time.

4. Other details can be seen in the tender documents

Sl. No	Name of the work	Tender processing fee	Amount put to tender Rs. (approx)	Bid security Rs. (EMD)	Period of completion	Eligibility criteria during last 5 years (2020-21 , 2021-22,2022-23, 2023-24 & 2024-25)	
						Financial Turnover (in all classes of Civil Engg. Construction works) for any of the two years during the last five years Rs.	Performance and work Qualification
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Work of Supply, Installation, Testing & Commissioning of Submersible ultra heavy duty, dredging vertical pumpset, Supply of Helicoidal Screw conveyor and Helicoidal Inbuilt washing compactor, Supply of Odour Control Units, Online monitor of total and specific bacteria activity (E.coli and coliform) in water, Ultra Violet Disinfection	**As per Karnataka procurement portal.**	**Rs.306.39 Lakhs** **(Excluding GST @ 18%)**	**Rs.4.59 lakhs**	**09 months**	**Rs. 723.08 lakhs**	1)As a Prime Contractor, the tenderer should have satisfactorily completed at least one similar nature of Upgradation of Sewage Treatment plant / Design and construction of New Sewage Treatment plant including PLC/SCADA **of value not less than Rs.180.77 lakhs.** 2) The tenderer should have executed in any one financial year, a minimum quantity of : a. The firm should have carried out Upgradation of sewage treatment plant / Design and construction of New Sewage Treatment plant of Capacity 08 MLD including PLC/SCADA. b. 1 MLD of Sewage Treatment plant / Tertiary Treatment Plant with Ultra Violet Disinfection Reactor. 3)Each tender should further demonstrate: i) capacity = (A*N*1.5 - B)>= **Rs. 361.54** lakhs(amount put to tender including GST @18%)Assessed available tender 4)Liquid assets and /or availability of credit facilities of not less than **Rs.120.51**

	Reactor - 1 MLD Design Flow at Yelahanka 10MLD TTP coming under AEE(WWM-P-H&AV)-1 sub division(2nd Call)						**lakhs** (Credit lines /letter of credit / certificates from Nationalized/ Schedule banks in India for meeting the fund requirement etc.,

NOTE: 1.a The amount put to tender Rs.306.39 Lakhs is Excluding GST at 18% and the bidder should quote for the amount.

b.The GST amount is of Rs.55.15 Lakhs

2.The financial bid evaluation will be based on 1(a) of above Note

5. EMD shall be paid through OTC, NEFT, DEBIT CARD & CREDIT CARD through Karnataka Public Procurement Portal Only. The value of the Bid Security / EMD is as mentioned in the table above in column no 5.
6. Tenderers can access tender documents from www.kppp.karnataka.gov.in website only and upload the required details; those are mentioned in different sections in the bid document in to electronic tender on the website. Scanned documents those are required to be furnished as per Section 2, 3 & 4 of the bid document shall be submitted through Karnataka Public Procurement Portal.
7. The Tender processing fee once paid will not be refunded.
8. The successful Tenderer would be required to furnish the performance Bank Guarantee from a Nationalized / Scheduled Indian Bank, with jurisdiction at Bangalore as specified, towards guarantee for completion of work within the stipulated period as mentioned in tender document.
9. Applications / requisitions from joint venture Firms are not acceptable.
10. Bangalore Water Supply and Sewerage Board (BWSSB) reserves the right to cancel or annul the entire or part of this process of invitation at any time without assigning any reasons.
11. For any additional information regarding the above tender, the firms who are interested to quote, may contact office of the undersigned at the office address given below on all working days during office hours (10:30hours to 17:00 hours).

Bangalore Water Supply & Sewerage Board
Office of Chief Engineer (Waste Water Management-West)
6th Floor, Cauvery Bhavan,
K.G.Road, Bangalore.
Telefax:080-22945350

12. Tenderers shall submit offers that comply with the requirements of the bid document.
13. Successful Bidder has to follow the SWD (Solid Waste Management Rules 2016) in this tender work.

Corrigendum / Modification / Corrections, if any will be published in the website only.

Sd/-

Chief Engineer
(Waste Water Management-West)

SECTION 2:

INSTRUCTIONS TO TENDERERS (ITT)

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A. General

1. Scope of Tender

1.1 The **Chief Engineer (WWM-W),** (Referred to as Employer in these documents) invites tenders following Two Stage Karnataka Public Procurement Portal procedure, from eligible Tenderers, **: Work of Supply, Installation, Testing & Commissioning of Submersible ultra heavy duty, dredging vertical pumpset, Supply of Helicoidal Screw conveyor and Helicoidal Inbuilt washing compactor, Supply of Odour Control Units, Online monitor of total and specific bacteria activity (E.coli and coliform) in water, Ultra Violet Disinfection Reactor - 1 MLD Design Flow at Yelahanka 10MLD TTP coming under AEE(WWM-P-H&AV)-1 sub division (2nd Call) (**as defined in these documents and referred to as "the work") detailed in the Table given in the Invitation for Tenders (IFT).

2. **Eligible Tenderers**

2.1 Tenderers shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Government of Karnataka

2.2 Tenders from Joint ventures are not acceptable.

3. Qualification of the Tenderer:

3.1 All Tenderers shall provide the requested information accurately and in sufficient
detail in Section 3: Qualification information.

3.2 To qualify for award of this contract, each Tenderer in its name should have in the
last five years i.e. (2020-21 to 2024-25)

a) Achieved in at least two financial years a minimum financial turnover (in all classes of civil engineering construction works only) of **Rs.723.08 Lakh.**

i) As a Prime Contractor, the tenderer should have satisfactorily completed at least one similar nature of Upgradation of Sewage Treatment plant / Design and construction of New Sewage Treatment plant including PLC/SCADA **of value not less than Rs.180.77 lakhs.**

ii) The tenderer should have executed in any one financial year, a minimum quantity of

a. The firm should have carried out Upgradation of sewage treatment plant / Design and construction of

New Sewage Treatment plant of Capacity 08 MLD including PLC/SCADA.

b. 1 MLD of Sewage Treatment plant / Tertiary Treatment Plant with Ultra Violet Disinfection Reactor.

3.3 Each tenderer should further demonstrate:

b) Liquid assets and /or availability of credit facilities of not less than **Rs.120.51 lakhs.** (Credit lines/letter of credit/certificates from Nationalised / Schedule banks in India for meeting the fund requirement etc.,

3.4 To qualify for a package of contracts made up of this and other contracts for which tenders are invited in this IFT, the tenderer must demonstrate having experience and resources to meet the aggregate of the qualifying criteria for the individual contracts.

3.5 Sub-contractors experience and resources shall not be taken into account in determining the Tenderers compliance with the qualifying criteria except to the extent stated in 3.2 above.

3.6 Tenderers who meet the above specified minimum qualifying criteria, will only be qualified, if their available tender capacity is more than the total tender value. The available tender capacity will be calculated as under:

a) **Assessed available tender capacity = (A*N*1.5 - B)>= 361.54 Lakhs (Amount put to tender including GST@18%)**

where

A = Maximum value of civil engineering works executed in any one year during the last five years (updated to 2025-26 price level at 10% per year) taking into account the completed as well as works in progress.

N = Number of years prescribed for completion of the works for which tenders are invited.

B = Value, at 2025-26 price level, of existing commitments and on-going works to be completed during the next **09 months.**

Note: The statements showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Employer in charge, not below the rank of an Executive Engineer or equivalent.

3.7 Even though the Tenderers meet the above criteria, they are subject to be disqualified if they have:

- made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or
- record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.; and/or
- participated in the previous Tender for the same work and had quoted unreasonably high tender prices and could not furnish rational justification.

3.8 All the Electromechanical equipment should be compatible with the existing system. The manufacturer should be an approved vendor of BWSSB. Also, prior approval (Drawings & QAP) is required for each equipment from the BWSSB.

3.9 Factory inspection is mandatory for all the equipments and the performance test to be conducted at the factory and at site after commissioning. The contractor is responsible for making all the arrangements for the inspection.

4. One Tender per Tenderer:

4.1 Each tenderer shall submit only one tender for one package. A tenderer who submits or participates in more than one tender (other than as a sub-contractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Tenderer's participation to be disqualified.

5. Cost of Tendering:

5.1 The tenderer shall bear all costs associated with the preparation and submission of his tender, and the Employer will in no case be responsible and liable for those costs.

6. Site visit:

6.1 The Tenderer at his own responsibility and risk is encouraged to visit and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Tender and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Tenderers own expense.

B. Tender documents

7. Content of Tender documents

7.1 The set of tender documents shall have all the Sections given in Page 2:

7.2 Both the sets should be completed and uploaded with the tender.

8. Clarification of Tender Documents

8.1 A prospective tenderer requiring any clarification of the tender documents may notify the Employer by posting in the web site (Karnataka public procurement→My tenders→action→queries). No

identity of the participating tenderer shall be mentioned in the query. All queries & replies can be viewed by all participating tenderers.

8.2 Pre-tender meeting: ***Deleted***

9. Amendment of Tender documents

9.1 Before the deadline for submission of tenders, the Employer may modify the tender documents by issuing addenda.

9.2 Any addendum thus issued shall be part of the tender documents and shall be posted in the Karnataka public procurement portal website for viewing by all the purchasers of the tender documents.

9.3 To give prospective Tenderers reasonable time in which to take an addendum into account in preparing their tenders, the Employer shall extend as necessary the deadline for submission of tenders, in accordance with Sub-Clause 16.2 below.

C. Preparation of Tenders

10. Documents comprising the Tender

10.1.1 The tender submitted in Karnataka Public Procurement Portal by the Tenderer shall contain the documents as follows:

a) Scanned copy of Earnest Money Deposit.
b) The form of Tender (in the format indicated in Section 4)
c) Scanned copies of the certificates supporting the Qualification as in Section 3. Any other materials required to be completed and submitted by Tenderers in accordance with these instructions. The documents listed under Sections 3, 4, 6 and 9 shall be filled in without exception. PHOTOCOPIES OF THE DOCUMENTS SHOULD BE NOTARISED.

10.1.2 Rates for the Bill of Quantities (Section 9) shall be quoted at the provision made in the Karnataka Public procurement website Portal.

10.2 Tenderers submitting tenders together with other contracts stated in the IFT to form a package will so indicate in the tender together with any discounts offered for the award of more than one contract.

11. Tender prices

11.1 The contract shall be for the whole works as described in Sub-Clause 1.1, based on the priced Bill of Quantities submitted by the Tenderer.

11.2 The Tenderer shall fill in the unit rates in figures for all items of the Works described in the Bill of Quantities. The system will automatically calculate the amount of that item as well as the total Tender value. ***Items for which no rate is entered by the Tenderer will not be***

paid for by the Employer when executed and shall be deemed covered by the other rates in the Bill of Quantities

11.3 All duties, taxes, and other levies payable by the contractor under the contract, or for any other cause, shall be included in the rates, prices and total Tender Price submitted by the Tenderer.

11.4 DELETED

12. Tender validity

12.1 Tenders shall remain valid for a period not less than **ninety days** after the deadline date for tender submission specified in Clause 16. A tender valid for a shorter period shall be rejected by the Employer as non-responsive.

12.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the Tenderers may extend the period of validity for a specified additional period. The request and the Tenderers responses shall be made in writing or e-mail. A Tenderer may refuse the request without forfeiting his earnest money deposit. A Tenderer agreeing to the request will not be required or permitted to modify his tender, but will be required to extend the validity of his earnest money deposit for a period of the extension, and in compliance with Clause13 in all respects.

13. Earnest money deposit

13.1 Earnest Money Deposit shall be paid through Karnataka Procurement Portal only using any of the following four modes.

i. Credit Card (Online Payment)
ii. Direct Debit Using Internet Banking (Online Payment)
iii. Remittance at the Bank Counter - Challan (Offline Payment)
iv. NEFT (Offline payment).

13.2 Instruments having fixed validity issued as earnest money deposit for the tender shall be valid for 45 days beyond the validity of the tender.

13.3 Any tender not accompanied by an acceptable earnest money deposit and not secured as indicated in Sub-Clauses 13.1 and 13.2 above shall be rejected by the Employer as non-responsive.

13.4 The earnest money deposit of unsuccessful Tenderers will be returned within 30 days of the end of the tender validity period specified in Sub-Clause 12.1.

13.5 The earnest money deposit of the successful Tenderer will be discharged when the Tenderer has signed the Agreement and furnished the required Performance Security.

13.6 The Earnest money deposit may be forfeited:

a) if the Tenderer withdraws the Tender after tender opening during the period of tender validity;
b) if the Tenderer does not accept the correction of the Tender Price, pursuant to Clause 24; or
c) in the case of a successful Tenderer, if the Tenderer fails within the specified time limit to
   (i) Sign the Agreement; or
   (ii) Furnish the required Security deposit

14. Format and signing of Tender

14.1 The completed tender comprising of documents indicated in ITT 10, should be uploaded in the Karnataka Public Procurement Portal website along with scanned copies of requisite certificates those are mentioned in different sections in the bid document and scanned copy of tender Security / EMD.

14.2 All the documents should be uploaded in Karnataka Public Procurement website. Tenderer should take a print out of the Form of Tender in the Section 4 of the tender document on company letter head and should sign, stamp and upload the same to the tender. Authenticity of the singing authority shall be furnished. With this, it is taken that tenderer has signed & submitted the tender.

14.3 The Tender shall contain no alterations or additions, except those to comply with instructions issued by the Employer.

D. Submission of Tenders

15. Up-loading & submission of tenders

15.1 The tenders should be uploaded only through Karnataka Public Procurement Website. Tender should contain

A. Technical Tender consisting of following:

a. All the documents with required details in prescribed format; those are mentioned in different sections in the Tender. Form of Tender, etc., shall be downloaded, filled with required details, signed, scanned & uploaded to the Karnataka Public Procurement Portal (www.kppp.karnataka.gov.in)

b. The above documents along with notarized copies of documentary evidences as indicated in Section—2 of ITT, Section-3 Qualification information & Section-4 Forms of Tender shall be scanned and uploaded to the website compulsorily, failing which tender will be rejected in view of incomplete tender document and

B. Financial Tender consisting of Bill of Quantities

15.1 All rates for the items in the Schedule shall be posted in the work template provided in the tender document. Rates shall be entered in figures only.

15.2 DELETED

15.3 BID reference Number will be automatically generated by the server.

15.4 DELETED

16. Deadline for submission of the Tenders

16.1 DELETED.

16.2 The Employer may extend the deadline for submission of tenders by issuing an amendment in accordance with Clause 9, in which case all

rights and obligations of the Employer and the Tenderers previously subject to the original deadline will then be subject to the new deadline.

17. Late Tenders

17.1 The software of Karnataka Public Procurement website system will not allow the Tenderer to upload the documents after expiration of the stipulated date & time of Bid submission. The Tenderer shall refer the server time, which will be displayed in the Karnataka Public Procurement Portal. BWSSB will not be responsible for non-receipt of bids on the stipulated date & time prescribed in clause 16, due to Internet Problems, improper uploading or any other related problems. In case of connectivity problems, Tenderer may contact Helpdesk of the Karnataka Public Procurement Portal service provider and may also draw the attention of tender inviting authority.

18. Modification and Withdrawal of Tenders

18.1 Tenderers may "modify" and "withdraw" their tenders multiple numbers of times, until the deadline for submission of tenders by operating the relevant provision made in Karnataka Public Procurement Portal. If the Tenderer withdraws the tender before the deadline for submission of tenders and later if he is interested to submit the tender once again, may do so within the stipulated date & time as mentioned in Clause 16. In this case within the stipulated date & time, the tenderer can once again submit the requisition to the officer inviting tenders for access to the withdrawn tender document for resubmission. For this tenderer need not make any additional payment towards the cost of tender document. Communication of modification / withdrawal by other means will not be accepted.

18.2 DELETED

18.3 No Tender may be modified after the deadline for submission of Tenders.

18.4 Withdrawal or modification of a Tender between the deadline for submission of Tenders and the expiration of the original period of Tender validity specified in Clause 12.1 above or as extended pursuant to Clause 12.2 may result in the forfeiture of the earnest money deposit pursuant to Clause 13.

18.5 DELETED

E. Tender opening and evaluation

19. Opening of Technical Bid of Tenders and evaluation to determine qualified Tenderers:

19.1 The Employer will open the Technical details of all the Tenders received (except those withdrawn), including modifications made pursuant to Clause 18, in the presence of the Tenderers or their representatives who choose to attend at the Employer's office mentioned in the earlier para at 15:00 hours on the date and the place specified. In the event of the specified date of Tender opening being declared a holiday for the Employer, the Tenders will be opened at the appointed time and location on the next working day.

19.2 WITHDRAWAL proposal submitted pursuant to clause 18 shall be read out first and their bids shall not be opened.

19.3 The Tenderers names, the presence or absence of earnest money deposit (amount, format and validity), the submission of qualification information and such other information as the Employer may consider appropriate will be announced by the Employer at the opening.

19.4 The Employer shall prepare minutes of the Tender opening, including the information disclosed to those present in accordance with Sub-Clause 19.3.

19.5 The Price Tenders of all the Tenderers including modifications for financial tenders cannot be opened as this is programmed to open later after evaluation of the Technical details of the participating Tenderers.

19.6 The Employer will evaluate and determine whether each tender (a) meets the eligibility criteria defined in ITT Clause 2; (b) is accompanied by the required earnest money deposit as per stipulations in ITT Clause and (c) meets the minimum qualification criteria stipulated in ITT Clause 3. The Employer will draw out a list of qualified Tenderers.

20. Opening of Financial Bid of qualified Tenderers and evaluation:

20.1 The Employer will inform all the Qualified Tenderers the time, date and venue fixed for the opening of the price Tenders. The Employer will open the price tender of Qualified Tenderers at the appointed time and date in the presence of the Tenders or their representatives who choose to attend. In the event of the specified date of Price tender opening being declared a holiday for the Employer, the price tenders will be opened at the appointed time and location on the next working day.

20.2 DELETED

20.3 The Tenderers' names, the Tender prices, the total amount of each Tender, any discounts, and withdrawals, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening. No Tender shall be rejected at Tender opening.

20.4 The Employer shall prepare minutes of the Price Tender opening, including the information disclosed to those present in accordance with Sub-Clause 20.3.

21. Process to be confidential

21.1 Information relating to the examination, clarification, evaluation, and comparison of Tenders and recommendations for the award of a contract shall not be disclosed to Tenderers or any other persons not officially concerned with such process until the award to the successful Tenderer has been announced. Any effort by a Tenderer to influence the Employer's processing of Tenders or award decisions may result in the rejection of his Tender.

22. Clarification of Tenders

22.1 To assist in the examination, evaluation, and comparison of Tenders, the Employer may, at his discretion, ask any Tenderer for clarification of his Tender, including breakdowns of unit rates. The request for clarification and the response shall be in writing but no change in the price or substance of the Tender shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Tenders in accordance with Clause 24.

22.2 Subject to sub-clause 22.1, no Tenderer shall contact the Employer on any matter relating to its Tender from the time of the Tender opening to the time the contract is awarded. If the Tenderer wishes to bring additional information to the notice of the Employer, it should do so in writing.

22.3 Any effort by the Tenderer to influence the Employer in the Employer's Tender evaluation, Tender comparison or contract award decisions may result in the rejection of the Tenderers' Tender.

23. Examination of Tenders and determination of responsiveness

23.1 Prior to the detailed evaluation of Tenders, the Employer will determine whether each Tender; (a) has been properly signed; and; (b) is substantially responsive to the requirements of the Tender documents like (a)Form of Tender, (b)Declaration statement Scanned/ uploaded [including documents those are required to be furnished as per Section 2, 3 & 4 of the tender,]; (c) is accompanied by the required securities and; (d) is substantially responsive to the requirements of the tendering documents.

23.2 A substantially responsive Tender is one which conforms to all the terms, conditions, and specifications of the Tender documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the Tender documents, the Employer's rights or the Tenderer's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Tenderers presenting substantially responsive Tenders.

23.3 If a Tender is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non conforming deviation or reservation.

24. Correction of errors

24.1 Once the Tenderer key in the rates in figures, in the Bill of quantities provided, the system will automatically calculate the amount of that item as well as the total Bid value.

24.2 Deleted

25. Evaluation and comparison of Tenders

25.1 The Employer will evaluate and compare only the Tenders determined to be substantially responsive in accordance with Clause 23.

25.2 In evaluating the Tenders, the Employer will determine for each Tender the evaluated Tender Price by adjusting the Tender Price as follows:

(a) Making any correction for errors pursuant to Clause 24; and

(b) DELETED

25.3 The Employer reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the Tender documents or otherwise result in unsolicited benefits for the Employer shall not be taken into account in Tender evaluation.

25.4 DELETED

25.5 If the tender of the successful tenderer is seriously unbalanced in relation to the Employer's estimate of the cost of the work to be performed under the contract, the Employer may require the Tenderer to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the Employer may require that the amount of the performance security set forth in Clause 29 be increased at the expense of the successful Tenderer to a level sufficient to protect the Employer against financial loss in the event of default of the successful under the contract.

F. Award of Contract

26. Award criteria

26.1 Subject to Clause 27, the Employer will award the Contract to the Tenderer whose Tender has been determined to be substantially responsive to the Tender documents and who has offered the lowest evaluated Tender Price, provided that such Tenderer has been determined to be (a) eligible in accordance with the provisions of Clause 2, and (b) qualified in accordance with the provisions of Clause 3.

27. Employer's right to accept any Tender and to reject any or all Tenders

27.1 Not with standing Clause 26, the Employer reserves the right to accept or reject any Tender, and to cancel the Tender process and reject all Tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected Tenderer or Tenderers or any obligation to inform the affected Tenderer or Tenderers of the grounds for the Employer's action.

28. Notification of award and signing of Agreement

28.1 The Tenderer whose Tender has been accepted will be notified of the award by the Employer prior to expiration of the Tender validity period by writing, e-mail or by registered letter. This letter (hereinafter and in the

Conditions of Contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").

28.2 The notification of award will constitute the formation of the Contract, subject only to the furnishing of Security deposit in accordance with the provisions of Clause 29.

28.3 The Agreement will incorporate all agreements between the Employer and the successful Tenderer. It will be kept ready for signature of the successful Tenderer in the office of Employer within 30 days following the notification of award along with the Letter of Acceptance. Within 20 days of receipt, the successful Tenderer will sign the Agreement and deliver it to the Employer.

28.4 Upon the furnishing by the successful Tenderer of the Performance Security, the Employer will promptly notify the other Tenderers that their Tenders have been unsuccessful.

29. Security deposit

29.1 Within 20 days of receipt of the Letter of Acceptance, the successful Tenderer shall deliver to the Employer a Security deposit in any of the forms given below for an amount equivalent to 5% of the Contract price plus additional security for unbalanced tenders in accordance with Clause 25.5 of ITT and Clause 44 of the Conditions of Contract. :

- A bank guarantee in the form given in Section 10;

29.2 If the security deposit is provided by the successful Tenderer in the form of a Bank Guarantee, it shall be issued either by a Nationalized/Scheduled bank and valid in accordance with Clause 43 of Condition of Contract.

29.3 DELETED

29.4 Failure of the successful Tenderer to comply with the requirements of Sub-Clause 29.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Earnest money deposit.

30. DELETED

31. Corrupt or Fraudulent practices

31.1 The GOK requires that the Tenderers/Suppliers/Contractors, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, GOK :

a) will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

b) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a GOK contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a GOK contract.

31.2 Furthermore, Tenderers shall be aware of the provision stated in sub-clause 50.2 of the Conditions of Contract.

Sd/-

Chief Engineer (Waste Water Management-west)

SECTION 3:

QUALIFICATION INFORMATION

The following form is to be downloaded, particulars are to be filled, scanned & uploaded by the Tenderer.

The information to be filled in by the Tenderer hereunder will be used for purposes of computing Tender capacity as provided for in Clause 3 of the Instructions to Tenderers. This information will not be incorporated in the Contract.

1.1 Constitution or legal status of Tenderer [Attach copy]
Place of Registration _____
(Attach Copy)
Principal place of business: _____

1.2 Total value of civil engineering construction works executed and payments received in the last five years (in **Rs** Lakh)[attach certificate of Chartered accountant]

2020 – 21
2021– 22
2022– 23
2023 - 24
2024- 25

1.3 Work performed as Prime Contractor (in the same name) on works of similar nature over during the five years specified in 1.2 above.

Project Name	Name of Employer	Description of Work	Contract Number	Value of contract Rs. Lakh	Date of issue of work order	Specified period of completion	Actual date of completion	Remarks explaining reasons for delay in completion of work
1	2	3	4	5	6	7	8	9

1.4 Quantities of work executed as prime contractor (in the same name) during the last five years specified in 1.2 above: [to support the qualification criteria in ITT clause 3]

Year	Name of Work	Name of Employer	Quantity of work performed (cum)		Remarks (Indicate contract reference)

1.5 Information on works for which Tenders have been submitted and works which are yet to be completed as on the date of this Tender.

(A) Existing commitments and on-going works:

Description of Work	Place & State	Contract No. & Date	Name and Address of Employer	Value of Contract (Rs. Lakh)	Stipulated period of completion	Value of works remaining to be completed (Rs. Lakh)	Anticipated date of completion
1	2	3	4	5	6	7	8

(B) Works for which Tenders already submitted:

Description of Work	Place & State	Name and Address of Employer	Estimated value of works (Rs. Lakh)	Stipulated Date period of completion	when decision is expected	Remarks if any
1	2	3	4	5	6	7

1.6 Items of equipment essential for carrying out the works.

Item of Equipment	Requirement			Owned and available		Remarks
	No.	Capacity	Owned	Number/ Capacity	Age/ Condition	

1.7 Reports on the financial standing of the tenderer, such as profit and loss statements and auditor’s reports for the last five years;

1.8 Qualification and experience of the key technical and management personnel in permanent employment with the tenderer and those that are proposed to be deployed on this contract, if awarded.

1.9. Name, address, and telephone, telex, and fax numbers of the Tenderers' bankers who may provide references if contacted by the Employer.

1.10 Evidence of access to financial resources to meet the qualification requirement specified in ITT Clause3.3 (b): Cash in hand, Letter of Credit etc. List them below and attach certificate from the Banker in the suggested format as under:

BANKER'S CERTIFICATE

This is to certify that M/s. ..... is a reputed company with a good financial standing. If the contract for this work, namely ..... (name of the work) is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs. ..... to meet the working capital requirements for executing the above contract

Sd/-
Name of the Bank, Senior Bank Manger
Address:
.....

1.11 Proposals for subcontracting components of works amounting to more than 20% of the contract price .

Item of Work	Value of Sub-Contract	Identified Sub-Contractor (Name and address)	Experience of similar work

1.12 Information on litigations in which the Tenderer is involved:

Other Party (ies)	Employer	Details of dispute	Amount involved	Remarks showing present status

1.13 The proposed methodology and program of construction, backed with equipment planning and deployment, duly supported with broad calculations and quality control procedures proposed to be adopted, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion as per milestones.

Sd/-

Chief Engineer

(Waste Water Management-West)

SECTION 4:

[Tenderer shall down load this page, print on the letter head, fill the gaps with signature, scan the sheet & upload to the website. Failing which the tender will be treated as non-responsive]

FORMS OF TENDER, LETTER OF ACEPTANCE, NOTICE TO PROCEED WITH THE WORK AND AGREEMENT FORM

Form of Tender

Description of the Work: **Work of Supply, Installation, Testing & Commissioning of Submersible ultra heavy duty, dredging vertical pumpset, Supply of Helicoidal Screw conveyor and Helicoidal Inbuilt washing compactor, Supply of Odour Control Units, Online monitor of total and specific bacteria activity (E.coli and coliform) in water, Ultra Violet Disinfection Reactor - 1 MLD Design Flow at Yelahanka 10MLD TTP coming under AEE(WWM-P-H&AV)-1 sub division.(2nd Call)**

To

The Chief Engineer (Waste Water Management-West)
Bangalore Water Supply & Sewerage Board
6th Floor, Cauvery Bhavan D-Block,
K.G. Road, Bangalore 560009

GENTLEMEN,

We offer to execute the Works described above in accordance with the Conditions of Contract accompanying this Tender for the Contract Price uploaded for this tender to be opened after qualification.

This Tender and your written acceptance of it shall constitute a binding contract between us. We understand that you are not bound to accept the lowest or any Tender you receive.

We undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against fraud and corruption in force in India namely “Prevention of Corruption Act 1988”.

We hereby confirm that this Tender complies with the Tender validity and Earnest money deposit required by the Tender documents.

We attach herewith our current income-tax clearance certificate.

Yours faithfully,
Authorized Signature:

Name & Title of Signatory:
_____
Name of Tenderer _____
Address: ----------

Letter of Acceptance
(letterhead paper of the Employer)

_____[date]

To:
_____[name and address of the Contractor]

Dear Sirs,

This is to notify you that your Tender dated _____ for execution of the _____[name of the contract and identification number, as given in the Instructions to Tenderers] for the Contract Price of Rupees _____ —— _____ (_____) [amount in words and figures], as corrected and modified in accordance with the Instructions to Tenderers is hereby accepted by our Agency.

You are hereby requested to furnish Security deposit plus additional security for unbalanced tenders in terms of Clause 25.5 of ITT, in the form detailed in Clause 29.1 of ITT for an amount of Rs.————— within 20 days of the receipt of this letter of acceptance valid up to 30 days from the date of expiry of Defects Liability Period i.e. up to ..... and sign the contract, failing which action as stated in Para 29.4 of ITT will be taken.

Yours faithfully,

Authorized Signature
Name and Title of Signatory
Name of Agency

Issue of Notice to proceed with the work

(letterhead of the Employer)

————— (date)

To
————————————————— (name and address of the Contractor)
—————————————————
—————————————————

Dear Sirs:

Pursuant to your furnishing the requisite security deposit as stipulated in ITT Clause 29.1 and signing of the contract agreement for the construction of ———————[name of the contract] a Tender Price of Rs.———————, you are hereby instructed to proceed with the execution of the said works in accordance with the contract documents.

Yours faithfully,

(Signature, name and title of signatory authorized to sign on behalf of Employer)

Agreement Form
Agreement

This agreement, made the _____day of _____20_____, between_____ _____[name and address of Employer] (hereinafter called "the Employer") of the one part and _____ _____ _____ _____[name and address of contractor] (hereinafter called "the Contractor") of the other part.

Whereas the Employer is desirous that the Contractor execute _____ _____[name and identification number of Contract] (hereinafter called "the Works") and the Employer has accepted the Tender by the Contractor for the execution and completion of such Works and the remedying of any defects therein at a contract price of Rupees.....

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.

2. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all aspects with the provisions of the Contract.

3. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying the defects wherein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

4. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz:
   i) Letter of Acceptance;
   ii) Notice to proceed with the works;
   iii) Contractor's Tender;
   iv) Contract Data;
   v) Conditions of contract (including Special Conditions of Contract);
   vi) Specifications;

vii) Drawings;
viii) Bill of Quantities; and
ix) Any other document listed in the Contract Data as forming part of the contract.

Whereas, the parties now mutually agree to the following conditions of Contract.

5. Jurisdiction of Courts/Arbitration: The Sitting of arbitration shall be held at Bangalore only and nowhere else.
6. Dispute of any kind arising out of the contract shall be resolved within the jurisdiction of Bangalore city only and the parties agree and clearly understand that the courts/ tribunals situated at Bangalore Metropolitan City have exclusive jurisdiction for the redressal of the disputes arising out of the contract and at no other place.
7. The parties further agree and understand that the place or places of issue of bank guarantee other than Bangalore will have no jurisdiction to resolve dispute of any kind relating to enforcement of the bank guarantees submitted by the contractor at Bangalore for the execution of the contract at Bangalore.
8. The contractor shall comply with all the legal requirements in the matter of employment of workmen and provide all safety gadgets to the workmen while working in the hazards place of conditions during the execution of the contract.
9. Contractor shall be fully responsible in the event of death of employee/ workman during the execution of the work and liable to pay adequate compensation to the dependants of employee/ workman as per law.
10. On his/ their failure, if the Board is made to pay compensation the same shall be recovered by the Board from the contractor out of the amounts due to the contractor or by appropriate legal action.
11. If death of any employees occurs during execution of work due to negligence of contractor, the contract will be liable for termination.
12. In the event of such termination, the employer may consider blacklisting of firm after due notice.
13. In case of any death or accident the contract will be cancelled after following due process.

14. The Board will be entitled to claim exemplary damages from the contractor in case of death of any work man / employees of the contractor in any of the BWSSB works as it damages the reputation of

In witness whereof the parties thereto have caused this Agreement to be executed the day and year first before written.

The Common Seal of _____
was hereunto affixed in the presence of:

Signed, Sealed and Delivered by the said _____
in the presence of:

Binding Signature of Employer _____

Binding Signature of Contractor _____

SECTION 5: CONDITIONS OF CONTRACT

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Conditions of Contract

A. General

1. Definitions

1.1 Terms which are defined in the Contract Data are not also defined in the Conditions of Contract but keep their defined meanings. Bold letters are used to identify defined terms.

Bill of Quantities means the priced and completed Bill of Quantities forming part of the Tender.

Compensation events are those defined in Clause 38 hereunder.

The **Completion Date** is the date of completion of the Works as certified by the Employer in accordance with Sub Clause 46.1.

The **Contract** is the contract between the Employer and the Contractor to execute, complete and maintain the Works. It consists of the documents listed in Clause 2.2 below.

The **Contract Data** defines the documents and other information which comprise the Contract.

The **Contractor** is a person or corporate body whose Tender to carry out the Works has been accepted by the Employer.

The **Contractor's Tender** is the completed Tender document submitted by the Contractor to the Employer.

The **Contract price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

Days are calendar days; months are calendar months.

A **Defect** is any part of the Works not completed in accordance with the Contract.

The **Defects liability period** is the period named in the Contract Data and calculated from the Completion Date.

The **Employer** is the party who will employ the Contractor to carry out the Works.

Equipment is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

The **Initial Contract price** is the Contract Price listed in the Employer's Letter of Acceptance.

The **Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Employer by issuing an extension of time.

Materials are all supplies, including consumables, used by the contractor for incorporation in the Works.

Plant is any integral part of the Works which is to have a mechanical, electrical, electronic or chemical or biological function.

The **Site** is the area defined as such in the Contract Data.

Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Employer.

The **Start Date** is given in the Contract Data. It is the date when the Contractor shall commence execution of the works. It does not necessarily coincide with any of the Site Possession Dates.

A **Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract which includes work on the Site.

A **Variation** is an instruction given by the Employer which varies the Works.

The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the Contract Data.

2. Interpretation

2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Employer will provide instructions clarifying queries about the Conditions of Contract.

2.2 The documents forming the Contract shall be interpreted in the following order of priority:

(1) Agreement
(2) Letter of Acceptance, notice to proceed with the works
(3) Contractor’s Tender
(4) Contract Data
(5) Conditions of Contract
(6) Specifications
(7) Drawings
(8) Bill of quantities and
(9) any other document listed in the Contract Data as forming part of the Contract.

3. Law governing contract

3.1 The law governing the Contract is the Laws of India supplanted by the Karnataka Local Acts.

4. Employer's decisions

4.1 Except where otherwise specifically stated, the Employer will decide contractual matters between the Employer and the Contractor.

5. Delegation

5.1 The Employer may delegate any of his duties and responsibilities to other people after notifying the Contractor and may cancel any delegation after notifying the Contractor.

6. Communications

6.1 Communications between parties which are referred to in the conditions are effective only when in writing. A notice shall be effective only when it is delivered (in terms of Indian Contract Act).

7. Subcontracting

7.1 The Contractor may subcontract with the approval of the Employer but may not assign the Contract without the approval of the Employer in writing. Subcontracting does not alter the Contractor's obligations.

8. Other Contractors

8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Employer.

9. Personnel

9.1 The Contractor shall employ the technical personnel (of number and qualifications) as may be stipulated by GOK from time to time during the execution of the work. The technical staff so employed shall be available at site as may be stipulated by the Employer.

9.2 If the Employer asks the Contractor to remove a person who is a member of the Contractor’s staff or his work force stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

10. Employer’s and Contractor's risks

10.1 The Employer carries the risks which this Contract states are Employer’s risks, and the Contractor carries the risks which this Contract states are Contractor’s risks.

11. Employer's risks

11.1 The Employer is responsible for the excepted risks which are:

(a) Rebellion, riot commotion or disorder unless solely restricted to employees of the Contractor or his Sub-Contractors arising from the conduct of the Works; or

(b) A cause due solely to the design of the Works, other than the Contractor’s design; or

(c) any operation of the forces of nature (in so far as it occurs on the Site) which an experienced contractor:

(i) could not have reasonably foreseen; or

(ii) could reasonably have foreseen, but against which he could not reasonably have taken at least one of the following measures;
(A) prevent loss or damage to physical property from occurring by taking appropriate measures or
(B) insure against such loss or damage

12. Contractor's risks

12.1 All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks are the responsibility of the Contractor.

13. Insurance:

13.1 The Contractor shall prior to commencing the works, effect and thereafter maintain insurances , in the joint names of the Employer and the Contractor, (cover from the first working day after the Start Date to the end of Defects Liability Period), in the amounts stated in the Contract Data :
(a) for loss of or damage to the Works, Plants and Materials and the Contractor's equipment;
(b) for liability of both Parties for loss, damage, death and injury to third parties or their property arising out of the Contractor's performance of the Contract including the Contractor's liability for damage to the Employer's property other than the Works and
(c) for liability of both Parties and of any Employer's representative for death and injury to the Contractor's personnel except to the extent that liability arises from the negligence of the Employer, any Employer's representative or their Employees.

13.2 Policies and certificates for insurance shall be delivered by the Contractor to the Employer for his approval before the Start Date. All such insurance shall provide for compensation to be payable to rectify the loss or damage incurred. All payments received from insurers relating to loss or damage shall be held jointly by the Parties and used for the repair of the loss or damage or as compensation for loss or damage that is not to be repaired.

13.3 If the Contractor fails to effect or keep in force any of the insurances referred to in the previous sub-clauses or fails to provide satisfactory evidence, policies or receipts, the Employer may without prejudice to any other right or remedy, effect insurance for the cover relevant to such default and pay the premiums due and recover the same as a deduction from any other monies due to the Contractor. If no payments is due, the payment of the premiums shall be a debt due.

13.4 Alterations to the terms of an insurance shall not be made without the approval of the Employer.

13.5 Both Parties shall comply with any conditions of the insurance policies.

14. Site Investigation Reports:

14.1 The Contractor, in preparing the tender, shall rely on any site investigation reports referred to in the Contract data, supplemented by any information available to the Tenderer.

15. Queries about the Contract Data

15.1 The Employer will clarify queries on the Contract Data.

16. Contractor to construct the Works

16.1 The Contractor shall construct the Works in accordance with the Specification and Drawings.

17. The Works to be completed by the Intended Completion Date

17.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the program submitted by the Contractor, as updated with the approval of the Employer, and complete them by the Intended Completion Date.

18. Approval by the Employer:

18.1 The Contractor shall submit Specification and drawings showing the proposed Temporary Works to the Employer, who is to approve them if they comply with the Specifications and Drawings.

18.2 The Contractor shall be responsible for the design of Temporary Works

18.3 The Employer’s approval shall not alter the Contractor’s responsibility for design of the Temporary Works.

18.4 The Contractor shall obtain approval of third parties to the design of third parties to the design of the temporary Works where required.

18.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Employer before their use.

19. Safety

19.1 The Contractor shall be responsible for the safety of all activities on the Site.

20. Discoveries

20.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site is the property of the Employer. The Contractor is to notify the Employer of such discoveries and carry out the Employer's instructions for dealing with them.

21. Possession of the Site

21.1 The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the Contract Data the Employer is deemed to have delayed the start of the relevant activities and this will be Compensation Event.

22. Access to the Site

22.1 The Contractor shall allow the Employer and any person authorized by the Employer access to the Site, to any place where work in

connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plant are being manufactured / fabricated / assembled for the works.

23. Instructions

23.1 The Contractor shall carry out all instructions of the Employer which comply with the applicable laws where the Site is located.

24. Procedure for resolution of Disputes:

24.1 If the Contractor is not satisfied with the decision taken by the Employer, the dispute shall be referred by either party to Arbitration within 30 days of the notification of the Employer's decision.

24.2 If neither party refers the dispute to Arbitration within the above 30 days, the Employer's decision will be final and binding.

24.3 The Arbitration shall be conducted in accordance with the arbitration procedure stated in the Special Conditions of Contract.

B. Time Control

25. Program

25.1 Within the time stated in the Contract Data the Contractor shall submit to the Employer for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works.

25.2 The Employer's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Employer again at any time. A revised Program is to show the effect of Variations and Compensation Events.

26. Extension of the Intended Completion Date

26.1 The Employer shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date.

26.2 The Employer shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Employer for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information.

27. Delays ordered by the Employer

27.1 The Employer may instruct the Contractor to delay the start or progress of any activity within the Works.

28. Management meetings

28.1 The Employer may require the Contractor to attend a management meeting. The business of a management meeting shall be to review the progress achieved and the plans for remaining work.

28.2 The responsibility of the parties for actions to be taken is to be decided by the Employer either at the management meeting or after the management meeting and stated in writing to be distributed to all who attended the meeting.

C. Quality Control

29. Identifying defects

29.1 The Employer shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Employer may instruct the Contractor to search for a Defect and to uncover and test any work that the Employer considers may have a Defect

30. Tests

30.1 If the Employer instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect the test shall be a Compensation Event.

31. Correction of defects

31.1 The Employer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

31.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Employer’s notice.

32. Uncorrected defects

32.1 If the Contractor has not corrected a Defect within the time specified in the Employer’s notice, the Employer will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

1

2 D. Cost Control

33. Bill of Quantities (BOQ)

33.1 The BOQ shall contain items for the construction, installation, testing, and commissioning work to be done by the Contractor.

33.2 The BOQ is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the BOQ for each item

34. Variations

34.1 The Employer shall have power to order the Contractor to do any or all of the following as considered necessary or advisable during the progress of the work by him

(a) Increase or decrease of any item of work included in the Bill of Quantities (BOQ);
(b) Omit any item of work;
(c) Change the character or quality or kind of any item of work;
(d) Change the levels, lines, positions and dimensions of any part of the work;
(e) Execute additional items of work of any kind necessary for the completion of the works; and
(f) Change in any specified sequence, methods or timing of construction of any part of the work.

34.2 The Contractor shall be bound to carry out the work in accordance with any instructions in this connection, which may be given to him in writing by the Employer and such alteration shall not vitiate or invalidate the contract.

34.3 Variations shall not be made by the Contractor without an order in writing by the Employer, provided that no order in writing shall be required for increase or decrease in the quantity of an item appearing in the BOQ so long as the work executed conforms to the approved drawings.

34.4 The Contractor shall promptly request in writing the Employer to confirm verbal orders and if no such confirmation is received within 15days of request, it shall be deemed to be an order in writing by the Employer.

35. Payments for Variations

35.1 Payment for increase in the quantities of an item in the BOQ up to 25% of that provided in the Bill of Quantities shall be made at the rates quoted by the Contractor.

35.2 For quantities in excess of 125% of the tendered quantity of an item as given in the BOQ, the Contractor shall be paid at the rate entered in or derived from in the Schedule of Rates (applicable for the area of the work and current at the time of award of contract) plus or minus the overall percentage of the original tendered rates over the current Schedule of Rates prevalent at the time of award of contract.

35.3 If there is no rate for the additional, substituted or altered item of the work in the BOQ, efforts would be made to derive the rates from those given in the BOQ or the Schedule of Rates (applicable for the area of the work and current at the time of award of contract) and if found feasible the payment would be made at the derived rate for the item plus or minus the overall percentage of the original tendered rates over the current Schedule of Rates prevalent at the time of award of contract

35.4 If the rates for additional, substituted or altered item of work cannot be determined either as at 35.1 or 35.2 or 35.3 above, the Contractor shall be requested to submit his quotation for the items supported by analysis of the rate or rates claimed, within 7 days.

35.5 If the Contractor's quotation is determined unreasonable, the Employer may order the Variation and make a change to the Contract Price which shall be based on Employer's own forecast of the effects of the Variation on the Contractor's costs.

35.6 If the Employer decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.

35.7 Under no circumstances the Contractor shall suspend the work on the plea of non-settlement of rates for items falling under this Clause.

36. Submission of bills for payment

36.1 The Contractor shall submit to the Employer monthly bills of the value of the work completed less the cumulative amount paid previously.

36.2 The Employer shall check the Contractor's bill and determine the value of the work executed which shall comprise of (i) value of the quantities of the items in the BOQ completed and (ii) valuation of Variations and Compensation Events.

36.3 The Employer may exclude any item paid in a previous bill or reduce the proportion of any item previously paid in the light of later information.

37. Payments

37.1 Payments shall be adjusted for deductions for advance payments, other recoveries in terms of the contract and taxes, at source, as applicable under the law. The Employer shall pay the Contractor the within **60 days** of submission of bill. The Contractor shall be liable to pay liquidated damages for shortfall in progress. For Progress beyond the agreed Programme, payment is subject to availability of the grants.

37.2 Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

38. Compensation events

38.1 The following are Compensation events unless they are caused by the Contractor:

(a) The Employer does not give access to a part of the Site by the Site Possession Date stated in the Contract Data.
(b) The Employer orders a delay or does not issue drawings, specifications or instructions required for execution of works on time.
(c) The Employer instructs the Contractor to uncover or to carry out additional tests upon work which is then found to have no Defects.
(d) The Employer gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons.
(e) The effect on the Contractor of any of the Employer's Risks.

(f) The Employer unreasonably delays issuing a Certificate of Completion.
(g) Other Compensation Events listed in the Contract Data or mentioned in the Contract.

38.2 If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date is extended. The Employer shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.

38.3 As soon as information demonstrating the effect of each Compensation event upon the Contractor's forecast cost has been provided by the Contractor, it is to be assessed by the Employer and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Employer shall adjust the Contract Price based on Employer’s own forecast. The Employer will assume that the Contractor will react competently and promptly to the event.

38.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor not having given early warning or not having cooperated with the Employer.

39. Tax

39.1 Taxes, Duties and other Levies:

a) The selected bidder will be fully responsible for all applicable taxes, duties, license fees, etc. incurred in relation to the work. They must cover the taxes that may be imposed on their own personnel or any of their employees' earnings and will be expected to protect the employer from any potential claims made against them. The selected bidder must indemnify and hold the employer harmless against any such claims.

a) According to Commercial Tax Department Notification No.12/2017, all services are subject to a nil rate of GST under the definition of a pure service. The quoted rate should exclude the GST, which will be charged separately as per the prevailing applicable laws.

c) BWSSB does not assume any responsibility for taxes under the Indian Income Tax Act, 1961 for the selected bidder(s) or their personnel. In accordance with the provisions of the Indian Income Tax Act, 1961, if necessary, BWSSB will make deductions for Income Tax at source. The applicable tax at the prevailing rate will be included over and above the quoted price

If the Amount put to tender is exclusive of GST

GST and TDS Clause:

Prevailing GST:

The prevailing Goods and Services Tax (GST) rate is 18% as per the current taxation regulations. The GST amount is not included in the bid amount put forward by the bidder but will be applicable in addition to the awarded contract cost.

TDS Deduction:

As per the GST notification, a Tax Deducted at Source (TDS) of 2% shall be deducted by the client while making payments for the bills raised by the bidder.

Submission of Security Deposit:

Upon issuance of the Letter of Award (LOA) at the award cost, including GST, the successful bidder shall be required to submit the entire security deposit, comprising the applicable GST amount as well.

Invoicing and Tax Compliance:

The successful bidder shall adhere to all relevant GST regulations and guidelines while invoicing for the work contract. The invoice/bills provided by the bidder should clearly indicate the applicable GST rate, along with the tax registration details, and comply with all legal requirements as specified by the GST authorities.

Changes in GST Rate:

In the event of any change in the GST rate during the execution of the contract, the responsibility of updating the invoicing and pricing structure to reflect the revised GST rate shall lie with the bidder. The contract shall remain in force, and both parties shall abide by the new GST rate as per the applicable law.

GST Documentation:

The bidder is required to provide all necessary GST-related documentation, such as tax invoices, payment receipts, and any other documents requested by the contracting authority, in a timely and accurate manner.

Any disputes or issues related to GST:

In case of any disputes or issues related to GST compliance, the bidder shall be responsible for resolving such matters with the appropriate tax authorities. The contracting authority shall not bear any liability for any non-compliance or discrepancies related to GST.

This provision is an integral part of the bid document, and all bidders are requested to thoroughly review and acknowledge their understanding

and compliance with the prevailing GST rate of 18% before submitting their bids.

40. Price Adjustment:

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41. Liquidated damages

41.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date (for the whole of the works or the milestone as stated in the Contract Data). The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages does not affect the Contractor's liabilities.

41.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Employer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment of bill.

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43. Securities:

43.1 The Security deposit (including additional security for unbalanced tenders) shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and type of instrument acceptable to the Employer. The Security deposit shall be valid until a date 30 days from the date of expiry of Defects Liability Period and the additional security for unbalanced tenders shall be valid until a date 30 days from the date of issue of the certificate of completion.

44. Cost of Repairs:

44.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

E. Finishing the Contract

45. Completion

45.1 The Contractor shall request the Employer to issue a Certificate of Completion of the Works and the Employer will do so upon deciding that the Work is completed.

46. Taking over

46.1 The Employer shall take over the Site and the Works within seven days of issuing a certificate of Completion.

47. Final account

47.1 The Contractor shall supply to the Employer a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Employer shall issue a Defect Liability Certificate and certify any final payment that is due to the Contractor within 90 days of receiving the Contractor's account if it is correct and complete. If it is not, the Employer shall issue within 90 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Employer shall decide on the amount payable to the Contractor and make payment within 60 days of receiving the Contractor’s revised account.

48. As built drawings and /or Operating and Maintenance Manuals

48.1 If “as built”[1] Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the Contract Data.

48.2 If the Contractor does not supply the Drawings by the dates stated in the Contract Data, or they do not receive the Employer’s approval, the Employer shall withhold the amount stated in the Contract Data from payments due to the Contractor.

49. Termination

49.1 The Employer may terminate the Contract if the other party causes a fundamental breach of the Contract.

49.2 Fundamental breaches of Contract include, but shall not be limited to the following:

(a) the Contractor stops work for 45 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Employer;

(b) the Employer instructs the Contractor to delay the progress of works and the instruction is not withdrawn within 60 days;

(c) The Contractor becomes bankrupt or goes into liquidation other than for a reconstruction or amalgamation;

(d) a payment due to the Contractor is not paid by the Employer within 90 days of the date of the submission of the bill by the Contractor.

(e) the Employer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Employer;

(f) the Contractor does not maintain a security which is required;

[1] Completion Drawings

(g) the Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined in the Contract data; and

(h) if the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in the executing the Contract. For the purpose of this paragraph : "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish Tender prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition."

49.3 When either party to the Contract gives notice of a breach of contract to the Employer for a cause other than those listed under Sub Clause 49.2 above, the Employer shall decide whether the breach is fundamental or not.

49.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.

49.5 If the Contract is terminated the Contractor shall stop work immediately, make the Site safe and secure and leave the Site as soon as reasonably possible.

50. Payment upon Termination

50.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Employer shall prepare bill for the value of the work done less advance payments received up to the date of the bill, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor the difference shall be a debt payable to the Employer.

50.2 If the Contract is terminated at the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Employer shall prepare bill for the value of the work done, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works and less advance payments received up to the date of the certificate, less other recoveries due in terms of the contract, and less taxes due to be deducted at source as per applicable law and make payment accordingly.

51. Property

51.1 All materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be the property of the Employer, if the Contract is terminated because of a Contractor's default.

52. Release from performance

52.1 If the Contract is frustrated by any event entirely outside the control of either the Employer or the Contractor the Employer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which commitment was made.

53. Successful Bidder has to follow the SWD(Solid Waste Management Rules 2016) in this tender work.

F. Special Conditions of Contract

1. Labour :

The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

The Contractor shall, if required by the Employer, deliver to the Employer a return in detail, in such form and at such intervals as the Employer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Employer may require.

2. Compliance with labour regulations:

During continuance of the contract, the Contractor and his sub contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notification that may be issued under any labour law in future either by the State or the Central Government or the local authority. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the Contractor, Employer shall have the right to deduct any money due to the Contractor including his amount of security deposit. The Employer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.

3. Protection of Environment:

The contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation. During continuance of the contract, the contractor and his sub-contractors shall abide at all times by all existing enactments on environmental protection and rules made there under, regulations, notifications and bye-laws of the State or Central Government, or local authorities and any other law, bye-law, regulations that may be passed or notification that may be issued in this respect in future by the State or Central Government or the local authority.

4. Arbitration (Clause 24)

4.1 The procedure for arbitration shall be as follows:

(a) In case of dispute or difference arising between the Employer and the Contractor relating to any matter arising out of or connected with this agreement it shall be settled in accordance with the Arbitration and Conciliation Act 1996. The disputes or differences shall be referred to a Sole Arbitrator. The Sole Arbitrator shall be appointed by agreement between the parties; failing such agreement, by the Appointing Authority (any one of the Organizations as per list enclosed in Annexure)

(b) Arbitration proceedings shall be held at ***Bangalore***, Karnataka, India

(c) The cost and expenses of arbitration proceedings will be paid as determined by the Arbitrator. However the expenses incurred by each party in connection with the preparation, presentation, etc., shall be borne by each party itself.

(d) Performance under the contract shall continue during the arbitration proceedings and payments due the Contractor by the Employer shall not be withheld, unless they are the subject matter of the arbitration proceedings.

5 Contractor to Co-ordinate his Work with Other Contractors

5.1 The Contractor has to co-ordinate with the other concerned Contractors as already specified in Conditions of Contract for all such works as per the directions of Engineer in charge at no extra cost.

6 **Continuation of Work:**

6.1 In case of the death of a contractor after executing the agreement / commencement of the work, his legal heir, if any eligible registered contractor and willing, can execute and complete the work at the accepted tender rates irrespective of the cost of the work

7. Successful Bidder has to follow the SWD(Solid Waste Management Rules 2016) in this tender work.

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Sd/-

Chief Engineer (Waste Water Management-West)

SECTION 6:
CONTRACT DATA

Items marked "N/A" do not apply in this Contract.

The following documents are also part of the Contract:

- The Schedule of Operating and Maintenance Manuals
- The Methodology and Program of Construction
- Site Investigation Reports
- The Schedule of Key and Critical Equipment to be deployed on the work as per agreed program of construction.

The Employer is :

Name: Bangalore Water Supply and Sewerage Board represented by **Chief Engineer (Waste Water Management-West)**

Address: Bangalore Water Supply & Sewerage Board
6th Floor, Cauvery Bhavan D-Block,
K.G. Road, Bangalore 560009

Name of authorized Representative: Executive Engineer (WWM-P-H&AV)
Opp. Nagawara Lake, BDA
Outer Ring Road,
Bengaluru-560024.

The name and identification number of the Contract is :

Work of Supply, Installation, Testing & Commissioning of Submersible ultra heavy duty, dredging vertical pumpset, Supply of Helicoidal Screw conveyor and Helicoidal Inbuilt washing compactor, Supply of Odour Control Units, Online monitor of total and specific bacteria activity (E.coli and coliform) in water, Ultra Violet Disinfection Reactor - 1 MLD Design Flow at Yelahanka 10MLD TTP coming under AEE(WWM-P-H&AV)-1 sub division.(2nd Call)

The start date shall be the date of issue of notice to proceed with the work.

The Intended Completion Date for the whole of the Works is **09 Months**

Milestone Dates:

	Physical works to be completed	Period from the date of issue of notice to proceed with the work
Milestone 1	100% completion of work in all respects as per the scope of work awarded in the contract.	0-9 months

The Site possession date is the day of issue of notice to proceed with the work

The Site location is defined in drawing.

The Defects Liability Period is 365 days.

Insurance requirements are as under:

Type of Cover		Minimum Cover for Insurance
(i)	Works , Plant and materials	The sum stated in the Agreement plus 20%
(ii)	Loss or damage to equipment	Full replacement cost
(iii)	Loss or damage to property of Third Party	Full replacement cost
(iv)	Personal injury or death insurance (a) for Third Party	Rs. 20.00 Lakh
	(b) for Contractor's employees or labour	In accordance with the statutory requirements applicable to Karnataka

Price Adjustment Formula;

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The liquidated damages for the whole of the works are Rs. ***0.1%*** per day of the contract value and that for the milestones are as under:

The maximum amount of liquidated damages for the whole of the works is ***ten*** percent of final contract price.

The date by which "as-built" drawings (in scale **1:200**) in 2 sets are required is within 30 days of issue of certificate of completion of Whole or Section of the Work as the case may be.

The amount to be withheld for failing to supply "as the date required is Rs.1,00,000-00

The following events shall also be fundamental breach of the contract :

1. The contractor has contravened Sub-clause 7.1 and Clause 9 of CC.

The percentage to apply to the value of the work not completed representing the Employer's additional cost for completing the Works shall be ***30*** percent.

Sd/-

Chief Engineer (Waste Water Management-West)

SECTION 7:

TECHNICAL SPECIFICATIONS

Scope of Works

The works shall be carried out with the integration of existing Plant and its process along with PLC&SCADA system. The Contractor has to ensure that during the execution of work any damages occurs, the Contractor has to rectify the same at their own cost. The Contractor also needs to ensure that Plant operation and treatment should not be hampered during the execution of the work. Necessary interfaces required shall be carried out by the Contractor.

1)<u>Supply, delivery at site, erection, testing and commissioning of Odour Control System (PTU)</u>

Scope

This document specifies the design and installation requirements for Odour Control Units (OCUs) in pumping station & wastewater treatment plants.

Objective

The objective of this Specification is to provide designers, manufacturers, and installers of an OCU with client requirements for its design, construction, installation and performance testing.

Design Guidelines

Process

The Odour control system Is designed to treat hydrogen sulphide (H2S) and other odorous compounds found in the air related to pumping stations, inlet works, Sewage treatment plants and sludge treatment area.

The odour control system shall be dual stage process, with a suction fan to extract the odorous air from the process the area, air pass through stage 1 (biological scrubber) and stage 2 (activated carbon) system before releasing to atmosphere.

Stage 1:

The system is designed to remove hydrogen sulphide (H2S) by providing an environment providing the growth of acidophilic, sulphur oxidizing bacteria. The system consists of Bio media, is an inert mineral, porous material designed to resist compaction and degradation from acidic sulphates of the biological oxidation of the hydrogen sulphide. Irrigation / portable water with nutrients will be supplied for humidification of the media, which shall be recirculated within the system to maintain the required pH and nutrients, shall be controlled with automated sensors and accessories.

Stage 2:

It is used to remove any remaining hydrogen sulphide as well as other odorous compounds. The second stage media shall be pelletized activated carbon made of coconut shell, specially made for wastewater odour removal application. Media shall be water regenerable at site with potable / irrigation water.

Water and acidic sulphate by products washed from the media leave the system through the drain piping at the bottom of the vessel and are returned to wet well or wastewater stream.

The cleaned air is discharge to the atmosphere through one stack at the top of the unit. Treated air quality shall be continuously monitored by hydrogen sulphide sensor.

Guidance for Air contaminants and quality requirements:

Item	Requirements
Inlet H2S concentration	Peak H2S concentration 500ppm Average H2S concentration 100ppm
Outlet H2S concentration at the odour control unit stack	<1ppm
Removal Efficiency	Hydrogen Sulphide >99%
Flow rate	Minimum 6 x airspace volume / hour. For tanks with fluctuating levels, the height shall be considered from the low water level. For tanks with fixed water level, free board can be taken as the height.
Design Ambient temperature	10-50 Degree C
Design Humidity	0-100%

Equipment Specification

a) First stage biological scrubber shall consist of media for bacterial growth which shall be made of inert material, porous designed to

resist compaction and degradation acidic environment. Media shall meet following minimum criteria to be met:

Material	Porous recycled glass media
Particle size	30-60mm
Bulk density	180-320 Kg/m3
Water adsorption	18-20%
Life	15 years

b) Second stage shall be based on Activated carbon, media shall be derived from coconut shells, pelletized to suit the application. This shall be water regenerable at site. Minimum life of the activated carbon in the first fill shall be 5 years.
c) The type of activated carbon selected must be effective in dealing with odours arising from maximum concentrations of hydrogen sulphide and other sewer gases
d) Activated carbon shall minimum meet the following specification:

Carbon Substrate	Coconut shell based
Regeneration	On site, water regenerable
CTC, minimum	50
Mean particle diameter	4 mm
Apparent density minimum	450±50 kg/m3
Hardness number, minimum	95
Moisture, maximum	10 percent
H2S adsorption capacity	0.16g/cc

a) Vessels and fittings shall be manufactured from a chemically resistant grade Vinyl ester based FRP unless otherwise stated; suitable for H2S gas applications.
b) Prefilter shall be manufactured in resilient plastic random mesh which are washable and long lasting. Housing shall be manufactured by chemically resistant grade Vinyl ester based FRP. Cleaning spray nozzles and drain shall be provided for Pre-filter for CIP.
c) Where the odour control system is fan assisted; all parts exposed to the fumes shall be chemically resistant Vinyl Ester based FRVE material and the motor and drive shall be sealed from the exhaust gas path.
d) Dedicated nutrient dosing set with nutrient mixing tank and duty & standby dosing pumps shall be provided.

e) Recirculating system with duty & standby pumps made of SS-316 or Polypropylene shall be considered to handle acidic water. The system shall be flowmeter to monitor the waterflow.
f) pH sensor and automatic pH adjustment of recirculating water shall be considered.
e) Fan motors shall be belt driven and suitable for installation IE3 rated comply with electric motors specifications. Fan shall controlled via a VFD for any speed variation purpose.
f) Sample probes: each vessel shall have three 40 mm diameter sample probes per bed. The sample probes shall be adequate to provide suitable extraction of media samples from the bed. The sample probes shall extend outside the vessel wall and shall be isolated with a uPVC ball valve.
g) Differential pressure gauge: One each set of DPI to monitor the pressure drop across the carbon bed, pre-filter and across bio-scrubber unit.
h) H2S monitor: One set of portable H2S gas detector to be provided to monitor the outlet gas concentration at the second stage discharge stack. The unit should have a display showing the concentration of H2S.
i) U-PVC drainage valves and pipework routed back to the wet well to drain off any condensate/regeneration liquid from the prefilters.
j) Extraction suction line and valves shall be non-corrosive uPVC/Polypropylene/FRP material.
k) Control panel shall be IP65 rated enclosure for outdoor application, shall be installed on the vessel or beside the unit. Control panel housing shall be made of FRP cabinet, operational parameters control shall be with PLC & HMI with a provision for connecting to Main SCADA of the plant.
l) Odour gas extracting chambers / tanks shall be covered with FRP sheets to avoid releasing the odour gases to the ambient. Self standing FRP covering structure is the preferred option, where it is not possible, cover with structural support shall be considered. It shall be removal type for maintenance.

Documentation

Technical Documents

The following information shall as a minimum be submitted with the proposal. The accuracy and completeness of the submission of all the requested data will form part of the tender evaluation. All information shall be submitted in both hard copy originals and as an electronic copy.

- Details of compliance to this technical specification.
- Technical proposal with equipment sizing and list of equipment and its specification.
- Data sheet of biological media, activated carbon media and major equipment.

- Proposed unit drawings Process & Instrumentation Drawing, General Arrangement Drawing and 3-Dimensional Drawing.
- Civil/Structural requirements, e.g. preliminary footprint dimensions, dead weight, operating weight, and dynamic loading criteria.

Manufacturer Eligibility Crieteria

Odour control systems are a specialized treatment process, to make sure the performance stability, longevity of the systems offered, lifetime equipment support, below are the minimum criteria to be met by Tenderer.

a) Odour control system manufacture shall be a specialist vendor for odour control equipment.
b) The manufacturer's profile shall be submitted.
c) Manufacture should be an ISO 9001:2015 certified manufacturer in Air Filtration manufacturing process, or similar process to make sure the quality of products.
d) The manufacturer shall have in-house gas testing facility to ensure the performance of the media for gases to be removed. Filtration media shall be tested at manufacturer facility during inspection, to ensure the odour removal efficiency. The gas testing Lab shall be recognized by NABL, DSIR or Similar national agencies.
e) Manufacturer shall have at least 10 Odour control unit installations of similar technology globally, 5 installations in India in municipal wastewater odour removal application in last 3 years.
f) Minimum 3 user certificate shall be submitted for showcasing the installation and satisfactory performance by clients. One letter shall be from any of the Indian municipal installation.
g) Letter from any of the municipal clients to showcase similar proposed system has been supplied and in satisfactory operational.

Odor Control Unit (OCU) dual stage 2100m3/hr

- Biological filter vessel
- Activated carbon vessel
- Biological media
- activated carbon media
- Prefilter
- Suction duty fan
- Local Control panel
- Differential pressure gauges for bio & AC media bed
- H2S monitoring unit outlet outlet to AC vessel
- Recirculation pumps
- Dosing pumps
- Interconnecting duct & fittings

Fabrication work for Tank covering:

- Fabrication work with MS epoxy coated Frames
- FRP sheets 6 mm solid checkered plate aprox 5120 sqft area to be covered
- Trap doors

Civil works

- Foundation for OCU
- Core cutting

Plumbing work

- Piping with proper fittings and supports

2) **Supply of Computerized Maintenance Management System (Software Package: Hexagon EAM/ SAP EAM) Implementation of CMMS Software** for Assest Maintenance, along with supply of user licences and allied softwares, Permanent CMMS Web User licenses (1 No.), Permanent CMMS Mobile User license (1 No.), Personal Computer (1 Nos.) & 10 inches Tablet (1 Nos.), Software (Windows, Office , Database etc) and Two (2) years of maintenance. – 1No

System Overview

The CMMS is a sophisticated application designed to address the asset maintenance requirements of the process industry. The system should efficiently manage a wide range of maintenance activities, including assets, inventory, and work orders, ensuring that all aspects of maintenance operations are streamlined and well-coordinated. The CMMS should enable organizations to achieve higher levels of efficiency and reliability in their maintenance processes, leading to enhanced operational performance.

Functional Specifications

The CMMS must include detailed functional specifications tailored to the unique needs of a water utility. The system should provide a comprehensive and efficient asset maintenance solution, facilitating optimal asset management and maintenance operations. It must help organizations maintain regulatory compliance and adhere to industry standards. This requirement is critical for water utilities, where the integrity and reliability of assets are paramount.

Accessibility

The CMMS provides dual accessibility through both mobile and web applications. This ensures that maintenance personnel can easily access and update information regardless of their location, providing comprehensive coverage and ease of use. The system should support real-time updates and quick responses to maintenance issues, reducing downtime and improving overall productivity. This feature is particularly crucial during the Operations & Maintenance (O&M)

phase, where timely and accurate maintenance interventions are essential.

Asset Maintenance

The CMMS can maintain all assets within the water treatment plant area, including pipelines, instruments, valves, pumps, and generators. The system should centralize the maintenance management of these critical assets, allowing for better planning, tracking, and execution of both corrective and preventive maintenance activities. This holistic approach should ensure that all assets are kept in optimal condition, minimizing the risk of failures, and extending their operational lifespan. The CMMS must enable water utilities to provide more reliable services to their customers while reducing operational costs and enhancing overall efficiency.

3) Dredging Pumps: Pumps should handle solids upto 65% with Particle such as Grit, Silt and Hard Solids. Discharge(Q) Range(m3/hr) -20-200,Pump Delivery Nozzle Size (mm)-100,Flange Drilling Standard- IS 1538,Liquid Temp (°C)-up to 90,Qty (h) Range (mWC)-40-10, Sp.Gr up to 2.8,Motor-Aqua Make with IEC 60034 Standard, Acceleration time @ DOL (Sec)-3-5,Max.Starting Current (I) 2 DOL (A)-313,Motor Speed-1500rpm, Rated motor Output (kW)30, Cable length(mtr)-20, Dual PVC Sheated round type Copper Conductor motor cable,(C). Pumpset Installation-Verticle Portable Stand, Install by using Vertical Portable Stand (D). Material of construction should be -High Chrome Iron pump casing, Lifting chain-MoC-Alloy steel-W/O- GI lifting chain with Oval ring @ 2m with and D/Bow shackle @1End-5 No’s

4) **Supply of Helicoidal Screw conveyor - Up to 6m in Length** - All Materials are in SS 316 Cost of Electrical and Instrumentation shall be inclusive – 1 No.

Technical specifications of Screening Conveyor

The Screening Conveyor shall be Shaft less Screw Conveyor and applied for conveying the floating debris to the next facilities. The screening system shall be supplied with a shaft less screw conveyor that will be used to convey the screenings to the automatic screenings press and discharge system that compacts, dewaters and discharges the screenings through a chute to the screenings storage system.

Dumping of the screenings on to the duty/standby conveyor opening shall be with the automatic deflection plate, which shall be positioned towards the conveyor which is selected from the LCP/SCADA for the duty and

automatically towards the standby if duty conveyor trips. Position of this deflection plate shall be interfaced with PLC.

Screening wash compactor shall be suitable for washing and compacting the floating waste coming out of the duty and standby shaft less screw conveyor in case of multiple screens, or directly from the screen in case of single screen installed in municipal waste water pumping station or treatment plant.

Shaftless screw conveyor shall be made of stainless steel of grade SS 304 hardened and shall incorporate shaft less spirals. Cover plates for shaftless screw conveyors shall be provided along the entire conveyor length to contain splatter. Conveyor trough covers shall be made from 5 mm of specified grade of stainless-steel single piece formed sheet metal, not greater than 1000 mm in length, attached to the screw conveyor trough using toggle clamps. The cover shall also be of sufficiently tight fit to prevent the conveyed media from leaking out of the conveyors. A minimum 2.5 mm neoprene gasket of 50 durometer shall be applied with an appropriate adhesive to the mating surfaces of the trough covers.

Its structure shall have excellent durability to continuous running for long time. It shall be well considered of abrasion resistance, corrosion and vibration resistance. It should have a structure which is free from debris material clogging.

The spiral flighting for the shaft less screw conveyors shall be designed to convey material without a center shaft. The spiral flights shall be designed with stability to prevent distortion and jumping in the trough while operating at design speed and design capacity. The spiral flighting shall be Stainless steel of grade SS 316.

Shaftless conveyor trough liner material shall be an ultra-high molecular (UHMW) polyethylene with a minimum 12 mm thickness. There shall be two colored layers in the liner material to indicate wear. The liner shall extend the full length of the trough, covering the entire semicircular bottom portion of the trough. The liner shall be secured at intervals not to exceed 1000 mm, using specified stainless steel retaining clips of an approved design.

ii) Technical specifications of Helicoidal Inbuilt washing compactor -

Screening wash compactor shall be made of stainless steel of grade SS 316. The wash compactor will receive the waste through inlet hopper and the waste shall get dropped in to the conveying zone of the compactor main body.

Screw and liner shall have rigid thickness for resisting corrosion and abrasion caused during carrying of debris. Its structure shall be designed not to invite biting and clogging. Casing shall be equipped with inspection port to the necessity as well as for cleaning convenience. Driving device shall have overload limiting switch for avoiding broken situation caused by overloading.

The conveying zone shall have perforations at the bottom so that the water coming along with the wet screening is dropped in to the dewatering trough. The dewatering trough will have a set of nozzles positioned upwards so that the screening particles chocking the perforations will be removed by the force of spray water. The construction of the dewatering trough shall be inclined towards the drive end so as to enable the flow of water to the drain hole provided with an elbow connection. The compactor main body shall also have a drain hole with an elbow connection.

In the conveying zone there shall not be any impeller wheel or any other mechanical breaking device. The breaking up of organic matter shall be done solely by water through an assembly of nozzles connected with solenoid valves in a special washing zone between the conveying and the compaction zone. The screening shall move towards the compaction zone by a shafted screw of a constant pitch connected to a drive shaft. This drive shaft shall be connected to the drive unit through axial and radial bearings. An electronic device shall operate the drive unit of the spiral in a forward reverse mode, separated by a stand still period. The time of forward and reverse operation as well as the stand still time shall be freely adjustable.

The non-drive end of the screw shall have the flight of reduced pitch in the compaction zone. For achieving better strength at non-drive end, the screw must be supported by wear bars connected to the wash press main body and reinforced with double flights of defined pitch.

An elephant trunk shape outlet tube shall be connected to the compactor body with a flanged connection. An elbow shall be provided at the flanged connection to carry the washed screening in the reduction tube. The reduction tube shall be divergent to ease the push of the washed screening upward in to the outlet tube. The end of the reduction tube shall have an elbow with discharge plate/chute to enable the collection of the screenings in bagging units or a container.

The Screening wash compactor shall remove the organic material by washing and compaction thus reducing the volume and weight by 50%.

The main body of Screening wash compactor shall have a material thickness of minimum 3 mm and the bottom of the compactor main body shall be perforated with 5 mm holes.

The screw flights of wash compactor shall have a minimum thickness of 10 mm and at the end of compaction zone, there shall be wear bars of 10 mm thickness bolted to the wash press main body/tube for easy replacement.

The elephant trunk shaped outlet tube shall be diverging to prevent the waste getting clogged. The connection of the outlet tube to the main body shall be flanged type. All the bend fittings (elbows) in the outlet tube shall be long radius design.

Frequency Inverter shall be provided for Forward-reverse-forward motion of the screw and as overload protection device.

The gearbox of screw conveyor and wash compactor shall be hollow shaft, parallel helical gear unit have a minimum service factor of 1.2, oil bath lubricated with oil sealing. The motor shall be of TEFC type with minimum IP 55 protection & Class F insulation and be suitable for operation on 3 phase, 415V and frequency of 50 Hz. The drive shaft must be precisely machined and shall have radial and axial bearings.

The common control panel shall have IP 55 protection, painted with epoxy paint and shall be comprising of

- Mushroom head emergency stop.
- Overload relays for motor protection.
- Circuitry to operate the Screening conveyor and wash compactor with signal for start command from screen motor start and delay-timer based stop command after the screen motor stops.
- Selector switch to operate the Screening conveyor and wash compactor in Auto, manual and remote mode.
- Provision for suitable PLC circuitry shall be provided in case requirement of connectivity with SCADA system.

The Screw conveyor and wash compactor shall be supplied factory assembled and duly tested at manufacturer’s works before dispatch. Upon receipt at site these shall be installed resting on the channel floor and mechanically or chemically anchored on to the platform in a way that there are minimum chances of misalignment.

Material of Construction

Screw	SS 316
Screw trough	SS 304
Screw cover	SS 304
Liner	Ultra-High Molecular Polyethylene (UHMPE)

Accessories

Anchor bolts and nuts	1 set
Special tools	1 set
Flexible joint for inlet and outlet	1 set
Liner (for spare)	1 set

5) <u>Supply, delivery at site, erection, testing and commissioning of brand new Online monitor of total and specific bacteria activity</u> (E.coli and coliform) in water. Based on fluorescent measurement of specific enzymatic activity: with all allied accessories. and to suit the site condition – 1 No

Implementation of Real-Time Monitoring of Fecal Coliform and E. coli at Treated Effluent in all Sewage Treatment Plants (STPs)

Water Quality & Public Health:

• Fecal Coliform & E. coli are key indicators of sewage contamination in water bodies.

• High levels of these bacteria indicate the presence of pathogens, posing health risks like waterborne diseases (cholera, typhoid, diarrhea, hepatitis, etc.).

• Real-time monitoring ensures that treated sewage meets safe discharge standards before entering the in to River or Lake.

Compliance with CPCB/NGT:

• The Central Pollution Control Board (CPCB) and NGT guidelines mandate that treated sewage should meet permissible limits before discharge.

• Continuous monitoring helps in regulatory compliance and prevents violations that can lead to penalties.

Preventing Lake Pollution & Ecosystem Damage

• Untreated or partially treated sewage can degrade water quality, leading to algal blooms, oxygen depletion, and harm to aquatic life.

• Real-time tracking allows immediate corrective actions to prevent such ecological damage.

Improved STP Performance & Efficiency

• Traditional monitoring (manual sampling & lab testing) delays detection of failures in STP operations.

• Real-time sensors provide instant feedback, allowing quick adjustments in treatment processes (e.g., aeration, disinfection).

• Helps in optimizing chlorination/UV treatment to ensure effective bacterial removal.

Data-Driven Decision Making

• Live data helps authorities track trends, detect anomalies, and predict system failures. • Enables better resource allocation and infrastructure upgrades where needed.

• Helps in public transparency and accountability for STP performance.

Instrument Specifications:

Based on fluorescent measurement of specific enzymatic activity:

- ß-Glucuronidase-> indicates E.coli activity
- ß-Galactosidase-> indicates Coliform activity
- Alkaline Phosphatase -> Total Activity

Communication Specifications:

- Integrated PC with Windows
- Graphical user interface with touchscreen
- Full network capability via direct LAN
- 2 x USB 2.0 type A
- 2 x LAN 10/100/1000MB/s; RJ-45
- 2x digital input
- 2x relays output
- Protocols: Modbus TCP and Modbus serial, others on request
- 1 x 4 - 20mA outputs
- English operating system: German, French and Spanish, and others on request

Specifications Options:

- Modem slot for UMTS, ISDN or analog (modem optional)

- Second sample inlet / extra rinsing
- Air-conditioning unit (if higher than 30°C / 86F)

Automatic cleaning:

- User selectable cleaning cycles
- Cleaning solution (sodium hypochlorite solution < 0,05% active) prevents fouling and enables unattended deployment for several weeks.

Technical Details:

- Protection classification: IP 54
- Weight: 25 KG (excluding airco)
- Dimensions (h x b x d): 460 x 450 x 321 mm
- Cabinet material: St. Steel
- Sample pressure: max 0.05 bar
- Sample connection: 4 mm ID
- Sample temp.: 10 - 35°C / 50F 95F
- Sample flow rate: 3 l/h
- Ambient temperature: 15 - 30°C / 59F 86F, > optional air-co necessary
- Power consumption (average): <100W
- Power: 220V - 50 Hz or 110V - 60Hz
- 1 programmable pump (sample)

Technical Specifications:

- The sample must be concentrated over a reusable 0,45 micron ceramic filter
- Must have Combined concentration and measurement in 1 step
- The sample volume should be increased from 100 up to 1.000 ml to decrease detection levels
- Should run without concentration step in case clean water samples have high enough bacteria
- Must be lab based reagent testing methods like Glucoronidase (for E.coli) and Galactosidase (for coliform testing)
- The Methods to be performed at specific temperatures to increase reactivity
- Must have Automatic dosing of buffer solutions to increase stabilization
- Should do an automatic cleaning step by heating up the reaction chamber up to 65 degrees Centigrade / 149 Fahrenheit and adding a disinfection solution
- Must detect bacteria in less than 1 hour

- Should run 4 different sequences to detect E.coli, coliform, enterococci and total bacteria
- There must be run 2 sequences in series in the same instrument
- The local calibration results should be converted to cells / 100 ml, MPN or CFU per 100 ml
- Automatic alarm setting for pressure to prevent clogging of the filter
- Automatic alarm in case of no sample availability
- Alarms to be automatically send by Email
- In case of alarms an automated sampler or pump should be started
- Output/Communication through 4-20 mA, TCP/IP or Modbus
- Must be Windows operated touchscreen

6) <u>UV Disinfection System</u>

All materials, equipment and appurtenances required to provide an closed pipe, pumped flow, low pressure high output (LPHO) (UV) disinfection system complete with an automatic chemical/mechanical cleaning system and variable output lamp drivers. The UV system shall be complete and operational with all control equipment and accessories as shown and specified herein. This system shall be capable of disinfecting effluent to meet the effluent water quality standards.

Design Flow : Average Flow or max outlet flow from secondary treatment whichever is higher

Number of Units : 1 No.

Performance Requirements:

Provide a UV disinfection system complete with UV Banks and automatic lifting mechanism or EOT Crane as applicable, System Control Center, Power Distribution Centers if applicable, and Motorized Weir Gate / Other suitable mechanisms as Water Level Controller(s). The ultraviolet disinfection system effluent quality performance shall be evaluated through grab samples taken in accordance with the Microbiology Sampling Techniques found in Standard Methods for the Examination of Water and Wastewater, 21st Ed.

The UV system shall be designed to deliver a minimum MS2 RED of 80 mJ/cm2 at max. flow, in effluent with a UV Transmission of maximum 60%, at end of lamp life (EOLL) after reductions for quartz

sleeve fouling to achieve the reuse effluent quality of < 2 MPN/100 ml on 95%ile basis (Below Detect Limit).

The RED shall be adjusted using an end of lamp life factor of 0.5 to compensate for lamp output reduction over the time period corresponding to the manufacturer's lamp warranty. The use of a higher lamp aging factor shall be considered only upon review and approval of independent third party verified data that has been collected and analysed in accordance with protocols described in the NWRI Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse (May 2003, 2012).

The RED shall be adjusted using a quartz sleeve fouling factor of 0.8 to compensate for quartz sleeve transmission reduction due to wastewater effluent fouling. The use of a higher quartz sleeve fouling factor shall be considered only upon review and approval of independently verified data that has been collected and analysed in accordance with protocols described in the NWRI Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse (May 2003, 2012). The data recorded for the determination of the validated fouling factor must be obtained by testing in secondary wastewater effluent utilizing the same lamp, quartz sleeve and cleaning system proposed by the UV manufacturer.

All UV Bank/pipe metal components in contact with effluent shall be Type 316 stainless steel. All wiring exposed to UV light shall be Teflon™ coated.

Lamp Array Configuration:

For in-channel systems, the lamp array configuration shall be in a staggered inclined arrangement perpendicular to water flow or horizontal lamp uniform array with all lamps parallel to each other and to the flow.

The UV shall be designed for complete submersion of the UV lamps under all flow conditions including both electrodes and the full length of the lamp arc.

UV Bank (Closed pipe):

Closed pipe UV shall consist of UV lamps, quartz sleeves and an automatic suitable chemical/mechanical cleaning system mounted in a Type 316 stainless steel frame.

Each lamp shall be enclosed in its individual quartz sleeve, one end of which shall be closed and the other end sealed by a lamp end seal. To be considered as an alternate, lamp quartz sleeves that are open at both ends shall be supplied with twice the amount of specified spare seals and lamps.

The closed end of the quartz sleeve shall be held in place by a retaining O-ring. The quartz sleeve shall not come in contact with any steel in the frame.

Each UV bank shall be rated Type IP65. UV banks that are not Type IP65 rated are not acceptable.

UV Lamps:

Lamps shall be high intensity low pressure amalgam design. Lamps that are not amalgam shall not be allowed. The filament shall be significantly rugged to withstand shock and vibration. Lamp wiring shall be Teflon insulated stranded wire. Lamps shall be rated to produce zero levels of ozone. The lamp shall withstand an average of four (4) on/off cycles per day without reducing lamp life, warranty or causing any damage to the lamp.

Lamps shall be operated by electronic lamp drivers with variable output capabilities ranging from 30% to 100% of nominal power. The lamp assembly shall incorporate active filament heating to maintain a minimum lamp efficiency of 35% across varying water temperatures and between the minimum and maximum stated lamp power levels.

Lamp Plugs:

Each lamp plug shall be accessible from the top of the UV bank to facilitate lamp removal without moving the UV banks or any other components.

An integral safety interlock in the lamp plug shall prevent removal of energized lamps.

The lamp plug shall be rated Type IP65.

Lamp Drivers:

Each lamp driver shall independently power two (2) UV lamps. Failure of one lamp shall not affect operation of the other lamp.

The lamp driver shall have a power factor correction circuit to ensure minimum 98% power factor and less than 5% total harmonic

distortion (THD) current at the maximum power level and nominal input voltage.

The lamp driver should be able to withstand voltage fluctuation of + 5%.

The lamp driver electrical efficiency shall be minimum 95% at the maximum power level.

A ground fault in the output circuit shall be detected and communicated as a warning to the external controls system while the corresponding lamp operates undisturbed.

The communication protocol shall be Modbus implemented on an RS485 electrical interface, or equivalent.

Quartz Sleeves:

Quartz sleeves shall be clear fused quartz circular tubing containing 99.9% silicon dioxide.

Sleeves shall have minimum UV transmittance at 254nm of 87% (1mm wall thickness).

Sleeves shall be open at one end only and domed at the other end.

Cleaning System:

An automatic suitable in-situ cleaning system shall be provided to clean the quartz sleeves using chemical/ mechanical methods. Wiping sequence shall be automatically initiated with capability for manual override.

UV system not having in-situ cleaning system shall provide offline chemical cleaning system consisting of chemical tank equipped with air blower and air grid for agitation, neutralization chemical tank and dosing pump, recirculation/transfer pumps with disposal piping as a minimum requirement as specified in Fifth Edition of Wastewater Engineering: Treatment and Resource Recovery by Metcalf &Eddy . UV system providing offline chemical cleaning shall provide minimum 50% UV Bank as standby.

The cleaning system shall also incorporate an integrated debris removal device to clear the quartz sleeves of any large solids or debris to maximize the life of the chemical/mechanical cleaning system.

The wiper on the cleaning system shall be parked out of the effluent when not in use.

The cleaning system shall be fully operational while UV lamps and modules are submerged in the effluent channel and energized.

Cleaning sequence frequency shall be field adjustable to enable optimization with effluent characteristics.

Cleaning system operation shall be remote auto (default) or remote manual.

The cleaning system shall be provided with the required solutions necessary for initial equipment testing and for equipment start-up.

The UV intensity sensor shall be cleaned utilizing the same chemical/mechanical cleaning method as that of the lamp quartz sleeves.

Effluent Level Controller - Modulating Weir Gate / Downward Opening Weir, if applicable.

Electrical:

All applicable electrical components shall be CE-listed to ensure safety standards are met.

Each UV lamp within a bank shall be powered from a Power Distribution Centre.

UV Manufacturer to supply all cabling between lamps and drivers.

Each electronic lamp driver shall power two lamps.

Power factor shall not be less than 98% leading or lagging.

Power Distribution Centre (PDC):

The Power Distribution Centres shall be installed in a temperature-controlled room.

PDC enclosure material shall be SS 304 Type 12

All Power Distribution Centers to be CE approved or equivalent.

Each PDC shall be able to electrically isolate each bank of lamp drivers and safely replace a lamp driver without de-energizing any other operating banks.

Control and Instrumentation:

1. System Control Center (SCC):

a) The monitoring, operation and control of UV System Control Center (SCC) should be through HMI screen.

b) Alarms shall be provided to indicate to plant operators that maintenance attention is required or to indicate an extreme alarm condition in which the disinfection performance may be jeopardized. The alarms shall include, but not be limited to:

i) Individual Lamp Failure

ii) Multiple Lamp Failure

iii) Low UV Intensity

iv) Bank Communication Alarm

c) Mode of operation for UV Banks can be manual, automatic or remote.

d) Elapsed time of each bank shall be recorded and displayed on the display screen when prompted.

e) The System Control Center should be connected to the main STP PLC for providing operational and alarm feedback.

2. UV Intensity Sensor:

Minimum 1 no. of intensity sensor shall be provided per UV Bank. A reference sensor shall be provided for reference check. Reference check shall be perform when the UV Bank is in working.

3. Low Level Probe:

Minimum 1 no. of electrode type low level probe shall be provided per UV channel/pipe

All other accessories, whether specified or not, but required for complete shall form part of contractors scope

PROJECT DETAILS

1.1 Background to the Project

Bangalore Water Supply and Sewerage Board (BWSSB), is the nodal agency responsible for planning and executing water supply and sewerage projects in Bengaluru. Recognizing the potential of Used Water Treatment Plants (UWTPs) to achieve water security by protecting freshwater resources and promoting a circular economy of water, the Ministry of Housing and Urban Affairs (MoHUA) has launched the “Jal Hi AMRIT” program. This initiative by GoI is aims to create “Water Secure Cities”. Further the Jal hi Amrit (JHA) aims to achieve,

- Efficient management of Sewage Treatment Plants (STPs)

- To produce a continuous supply of high-quality treated water that meets environmental standards and supports sustainable water recycling practices.

- To promote a circular economy of water by enabling reuse for various purposes like construction, industry, and irrigation.

The existing Sewage Treatment Plant (TTP) at Yelahanka is of 10 MLD capacity is based on ASP process with disinfection units. Hence, BWSSB has proposed the up-gradation and existing 10MLD capacity Sewage

Treatment Plant STP by installing following units including its Electro-Mechanical Equipment's with associated ancillary units complete

1. Supply of Helicoidal Screw conveyor and Helicoidal Inbuilt washing compactor

2. Implementation of CMMS software

3. Online monitor of total and specific bacteria activity (E.coli and coliform) in water.

4. Ultra Violet Disinfection Reactor - 1 MLD Design Flow

5. Supply, Installation, Testing & Commissioning of Submersible ultra heavy duty, dredging vertical pumpset

6. Supply of Odour Control Units

1.2 Works Details for Contract Package

The proposed system under this Contract consists of up-gradation of existing ASP based STP by installing above units and all its associated Electro-Mechanical Equipment's complete to meet the outlet parameter as specified in bid document including required new civil unit and modifications as required complete.

1.3 General Scope of Work

The Scope of Work under this contract includes but is not limited to the following in relation to the up-gradation and operation and maintenance of the Works, which are to be implemented under this contract:

- Bidder to plan up-gradation/modification sequence of above works such that the existing treatment plant should be in operation during Up-gradation, accordingly bidder to coordinate with O&M contractor.

- All preparatory work including clearing, leveling of site, site grading, formation of Finished Ground Level (FGL), construction/modifications of internal roads, etc., excavation, dewatering as required and disposal of all surplus earth to a suitable location as specified/directed by Engineer.

-- All existing facilities that are to be refurbished/Dismantled/ modified/demolished to accommodate new works. The demolition civil debris shall be disposed by the contractor as per statutory requirements wherever necessary.

- Demolishing/Refurbishing shall be carried out in accordance with all applicable laws, regulations, and standards. Items, components, or materials,

whether buried, exposed, submerged, or otherwise, shall not be abandoned or left on site unless explicitly specified.

- Preparation of process and hydraulic designs with layout, process flow diagram, piping and instrumentation diagram, mass balance and hydraulic flow diagram of the proposed works stipulated in scope.

- Preparation of GA Drawings, Unit Process/Equipment/Facility/Building layouts, etc. complete.

- Detailed sizing as to suit existing facilities, design, and engineering, of all treatment units, buildings, structures, and equipment (including all civil, mechanical, electrical, architectural, instrumentation, control, automation, and SCADA components).

- Submission of detailed engineering designs, drawings, calculations, and data sheets as per requirements of Bidding Document.

- Procurement, supply, installation, erection, testing and commissioning of all proposed mechanical, electrical, instrumentation, integration with existing PLC/SCADA system complete.

- Design, construction, and commissioning of all pipelines, channels wherever required or as directed by Engineer in charge.

- Listed equipment testing, commissioning, stabilization, demonstration of performance guarantee.

- Submission of Operation and Maintenance Manuals.

- Providing training services to Employer’s personnel including O&M staff.

- Restoration of all damaged roads drains, plantation and landscaping works to original condition to give pleasant environment of build out campus.

- Preparation and submission of As-Built drawings for all civil, mechanical, electrical, Instrumentation, SCADA works complete. (as applicable)

- Integration of proposed PLC system to existing main PLC based SCADA system for monitoring.

- Handing over the facilities.

- Methodology for construction/modification sequence shall be submitted for Engineers approval before start of the Up-gradation works.

Approved Vendor List

Sl. No.	**Equipment's**	**Make**
1	Odour Control System	M/s. Thermochem corporation Pvt Ltd, M/s. Voltriqs M/s. NEVCO Engineers Pvt Ltd, M/s Pure air Solutions
2	CMMS	M/s. Nandi Automation M/s. Magnolid Tech Pvt Ltd M/s. Southern Automation and Electrical Solutions Pvt Ltd
3	Dredging Pump	M/s. Aqua machineries Pvt Ltd M/s. M. M. DAKHANI M/s. Karthik Engineering
4	Helicoidal Screw conveyor and Helicoidal Inbuilt	M/s. GET Water Solutions Pvt Ltd M/s. Micro Transmission Systems

	washing compactor	M/s. EUROTECK Environmental Pvt Ltd
5	Online monitor of total and specific bacteria activity (E.coli and coliform) in water	M/s. ICE (Asia) Pvt Ltd M/s. Nexteng Enviro Pvt ltd M/s. Logic Ladder Technologies Private Ltd M/s. Potence Controls Pvt Ltd
6	Ultra Violet Disinfection Reactor	M/s Trojan Technologies Trojan UV & Aquafine Operations M/s Xylem Water Solutions India Pvt. Ltd. M/s Atlantium Technologies Ltd

SECTION 8:

DRAWINGS

(Annexed in Karnataka-Public Procurement Portal separately)

SECTION 9:

BILL OF QUANTITIES

(Filled vide Karnataka Public Procurement portal under financial document through work template)

Note:

(1) Item for which no rate or price has been entered in will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities (refer: ITB Clause 11.2 and CC Clause 37.2).

(2) Unit rates and prices shall be quoted by the Tenderer in Indian Rupees.

(3) Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by quantity, the unit rate quoted shall govern [ITT Clause 24.1 (b)]

SECTION 10:

FORMAT OF BANK GUARANTEE FOR SECURITY DEPOSIT

To: _____ [name of Employer]
_____ [address of Employer]

WHEREAS _____ [name and address of Contractor] (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. _____ dated _____ to execute _____ [name of Contract and brief description of Works] (hereinafter called "the Contract");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of Rs._____ [amount of guarantee] [63]_Rupees_____ _____[in words], and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ [amount of guarantee][64] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until 30 days from the date of expiry of the Defects Liability Period.

Signature and seal of the guarantor _____
Name of Bank _____
Address _____
Date _____

[63] An amount shall be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract.